

given a \$10 bill in payment :—4 lbs. butter, at 17 cts.; 12 yds. cotton, at 9 cts.; a knife, 35 cts.; 5 yds. cloth, at $62\frac{1}{2}$ cts.; 11 lbs. nails, at $3\frac{1}{4}$ cts.?

Ans. \$4.38.

II. $\frac{3}{4}$ of one number is the same as $\frac{7}{8}$ of another. What fraction is the first number of the second?

Ans. $\frac{1}{2}$.

III. If 14 cubic inches of lead weigh as much as a bar of iron $1\frac{1}{2}$ inches square and 12 inches long, and if iron be $7\frac{1}{2}$ times as heavy as water, how many cubic inches of lead will weigh as much as a cubic foot of water?

Ans. 119 $\frac{1}{4}$.

IV. The price of butter per lb. is just double the price of eggs per doz. Find the price of each when it costs \$1.26 to buy 56 eggs and $4\frac{3}{4}$ lbs. of butter.

Ans. 18 cts. and 9 cts.

V. Find the product of 821634 and 2972. Prove that your result is correct by "casting out the 9's," and demonstrate the principle on which the proof is based. Would the principle of the proof hold equally well if any other digit than 9 were used? and, if so, would the details of the operation differ in any respect from what they are when 9 is employed?

VI. There are four numbers between 25 and 135 whose G.C.M. is 13, and L.C.M. 910. What are they?

Ans. 26, 65, 91, 130.

VII. Find the products of (a) 2657 and 126, (b) 268327 and 2499, (c) 515 and 485 by any short methods you can.

VIII. Show clearly why $\frac{1}{2} \div \frac{1}{3} = \frac{3}{2}$.

IX. When one decimal is exactly divisible by another, show that, if any decimal places occur in the quotient, their number will be equal to the difference between the number in the divisor and in the dividend; but if no decimal places occur in the quotient the number of zeros coming after the significant figures will be equal to this difference. What must be the conditions fulfilled by divisor and dividend that each case may be true?

X. A man bought a watch and chain in New York, and on coming into Canada he smuggled the chain, but had to pay a duty

on the watch amounting to $\frac{1}{4}$ of its cost. He afterwards sold both watch and chain at a gain of $\frac{1}{4}$ on their whole cost, and thus gained \$34 on the price paid for them in New York. What was that price?

Ans. \$60 and \$20.

XI. At 10 cts. per yd., what will be the cost of fencing a plot whose length is to its breadth as 5 is to 3, and its area 960 square yards?

Ans. \$12.80.

XII. A silver plate 6 inches in diameter is melted and cast into medals, each one inch in diameter, and half as thick as the plate was. How many medals were obtained?

Ans. 72.

XIII. At 25 cts. per square foot, what will be the cost of gilding a right cylinder 2 feet high, the radius of the base being 8 inches?

Ans. \$2.79 $\frac{1}{3}$.

XIV. Find the volume of the largest sphere that can be cut out of a right cone, the radius of the base being 10 inches and the slant height $10\sqrt{5}$ inches.

Ans. $236 + \dots$ cubic inches.

XV. The length of a reservoir is to its breadth as 5 : 3, and its breadth to its height as 4 : 3. What are its dimensions, its capacity being 103,000 gallons?

Ans. 40, 24, and 18 feet respectively.

CLASSICS.

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NOTE.—All communications upon School Work in this Department must be sent to the Editor of it, not later than the 5th of each month.

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PART I.

CICERO, in *L. Catilinam*, II., Cap. xiii.

Translate :

Atque hæc omnia sic agentur, Quirites, ut res maximæ minimo motu, pericula summa nullo tumultu, bellum intestinum ac domesticum, post hominum memoriam crudelissi-